

I. A bidirectionally locking safety brake apparatus for use on tree climbing lanyards and other flexible climbing and safety lines, the safety brake apparatus comprising:

a) a substantially U-shaped hollow housing body member formed with opposite front and rear walls, an open first longitudinal end and an opposite, closed second longitudinal end wall, and a pair of opposite lateral side openings disposed adjacent said closed, second end wall for passage of a flexible line through the hollow interior of the body member adjacent said closed longitudinal end wall thereof, and

b) a brake cam apparatus pivotally secured within the hollow interior of said body member by interconnecting pivot mount member engaging said front and rear walls, said brake cam apparatus having a first longitudinal end mounting a connector member arranged to project from said first, open end of the body member for connection to a source of force for pivoting the brake cam apparatus in opposite directions about said pivot mount member, said brake cam apparatus having an opposite, second longitudinal end arranged for confronting disposition a spaced distance from said second end wall and configured with a central, neutral slip surface portion arranged to permit substantially unrestricted movement of a line extending through said openings and between said second longitudinal end of said brake cam member and said second longitudinal end wall of the body member when the brake cam apparatus is in a first, neutral, release orientation on said pivot mount, and provide opposite, line-engaging friction brake surfaces extending in opposite directions from said neutral slip surface portion arranged to frictionally engage and bind a line against said second end wall when a force

applied against said connector member pivots the brake cam member in either opposite direction of pivot on said pivot mount, and thus allow substantially unrestricted sliding movement of a line through the safety brake apparatus when the brake cam is in said neutral orientation, and locking the line against movement through the safety brake apparatus when  
25 the brake cam apparatus is pivoted in either direction into locking, binding interengagement with the line.

2. The safety brake apparatus of claim 1 wherein said pivot mount member comprises a removable pivot pin configured to releasably secure said brake cam apparatus pivotally on said housing body member for selective removal and reinstallation of the pivot pin and brake cam apparatus from the body housing for installation of the safety brake apparatus  
5 onto a longitudinally extending flexible line intermediate its terminal ends.

3. The safety brake apparatus of claim 1 wherein said opposite, line-engaging friction brake surfaces of said second longitudinal end of the brake cam apparatus are configured with roughened surfaces arranged for increased frictional engagement with a line for positive locking, braking interengagement therebetween.

4. The safety brake apparatus of claim 1 wherein said confronting second longitudinal end of the brake cam apparatus and the second end wall and lateral openings of the body member are together configured for use with a rope-type flexible line having a substantially circular cross section having a predetermined, selected diameter.

5. The safety brake apparatus of claim 1 wherein said confronting second longitudinal end of the brake cam apparatus and the second longitudinal end wall and lateral

openings of the body member are together configured for use with a strap type flexible line having predetermined width and thickness dimensions.

6. A safety tree climbing apparatus for connection to a safety harness worn by a climber, the safety tree climbing apparatus comprising:

- a) a tree-encircling lanyard line having selected connector members secured to its opposite longitudinal ends, the connector members arranged for releasable securement to  
5 a selected first connector mount of the climber's safety harness, said lanyard line having a preselected overall length of approximately twice the length required to extend from connection at one of its ends to the climber's safety harness and around a tree to be climbed and back to the climber's safety harness, and
- b) a bidirectionally locking safety brake apparatus slidably secured on said lanyard  
10 line at approximately the mid point between the opposite terminal ends thereof and dividing the lanyard line into opposite, approximately equal length first and second sections extending in opposite directions from the safety brake apparatus, the safety brake apparatus including a pivotally mounted lanyard line-engaging brake cam member arranged for rotatable securement to a second connector mount of the climber's safety harness, the brake cam  
15 member configured to provide substantially unrestricted sliding movement of the safety brake apparatus along the lanyard line when the brake cam member is pivoted on its pivot mount into a neutral, release position and provide frictional, locking, braking engagement with the lanyard line when pivoted in either opposite direction of pivot from said neutral, release position by force applied in either opposite direction to the brake cam through its connection

20 to the safety harness of the climber, whereby

c) with the safety brake apparatus connected to the second connector mount of a climber's safety harness, the first section of the lanyard line is extended around a tree to be climbed and connected at its terminal end to the first connector mount of the safety harness and the length of the first section is adjusted as desired by orienting the brake cam member  
25 into said neutral, release position and sliding the safety brake apparatus along the line after which the tree may be climbed in normal manner, the brake cam pivoted into said a locking position corresponding to the tension applied thereagainst by the outward force of the climber connected thereto and leaning outwardly against the supporting tree-encircling lanyard line section, and when vertical movement of the tree-encircling lanyard line section is prevented as  
30 by an outwardly projecting branch being encountered, said second lanyard line section is passed over the obstruction and extended around the tree trunk and connected at its terminal end to the first connector member of the safety harness mounting the end of the first section of the lanyard line, whereupon the length of the second lanyard line section is then adjusted as desired by release of tension force applied against the connection of the brake cam to the  
35 safety harness and manually moving the safety brake apparatus longitudinally on the line as needed after which the first section of the lanyard line is released from its connection to the first connector mount of the climber's safety harness thereby permitting continued vertical climbing and assuring that the climber is continuously secured to the tree by the tree-encircling safety climbing lanyard line even while passing obstructions to normal vertical  
40 movement of the tree-encircling climbing lanyard.